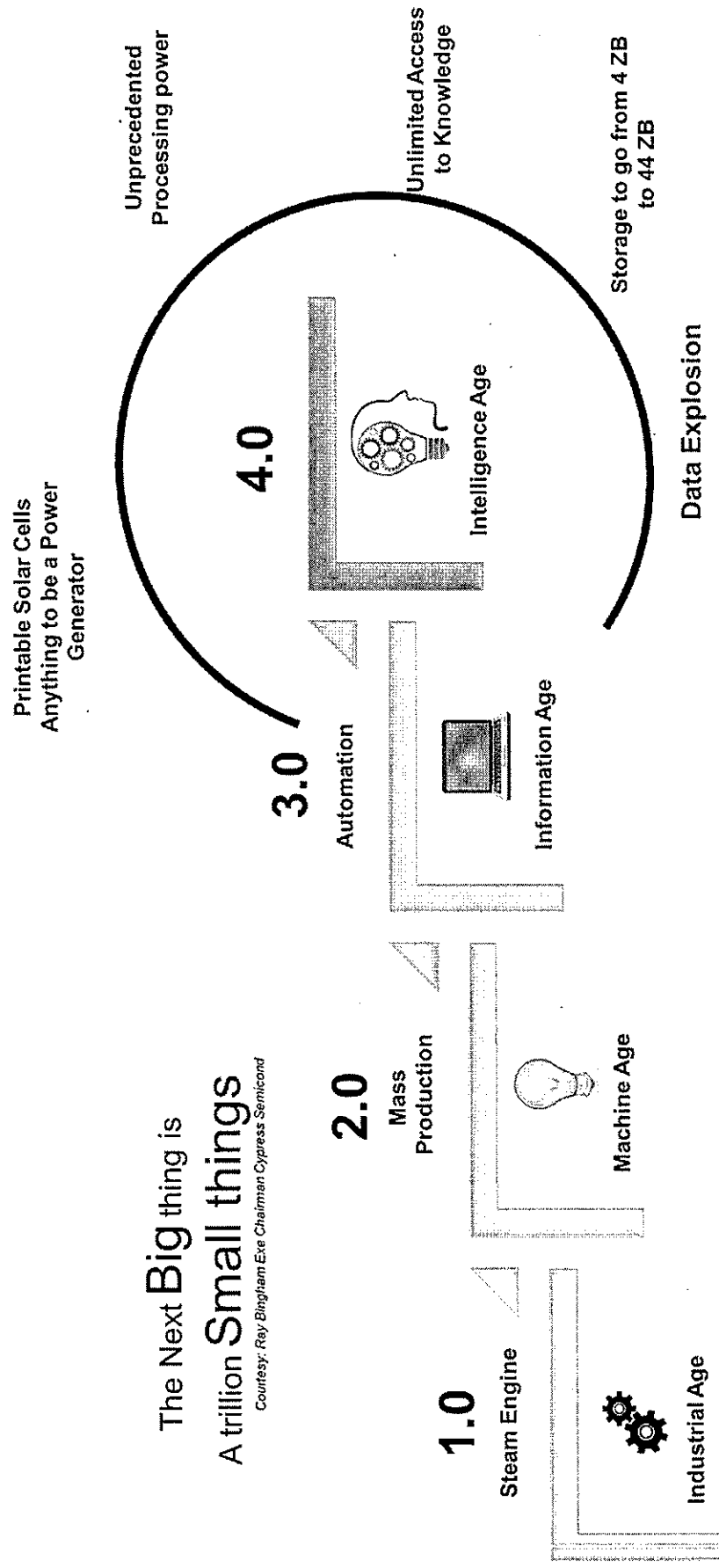


Roadmap for 4IR and IoT

Professor Ha Jin Hwang
Head and Professor of Information Systems
Department of Business Analytics
Sunway University Business School
hjhwang@sunway.edu.my

SMA 2017 International Conference
Dec. 18-20, 2017, Philippines

Start of another Industrial Revolution...



Courtesy: www.weforum.org 2016 - the fourth industrial revolution: what it means and how to respond

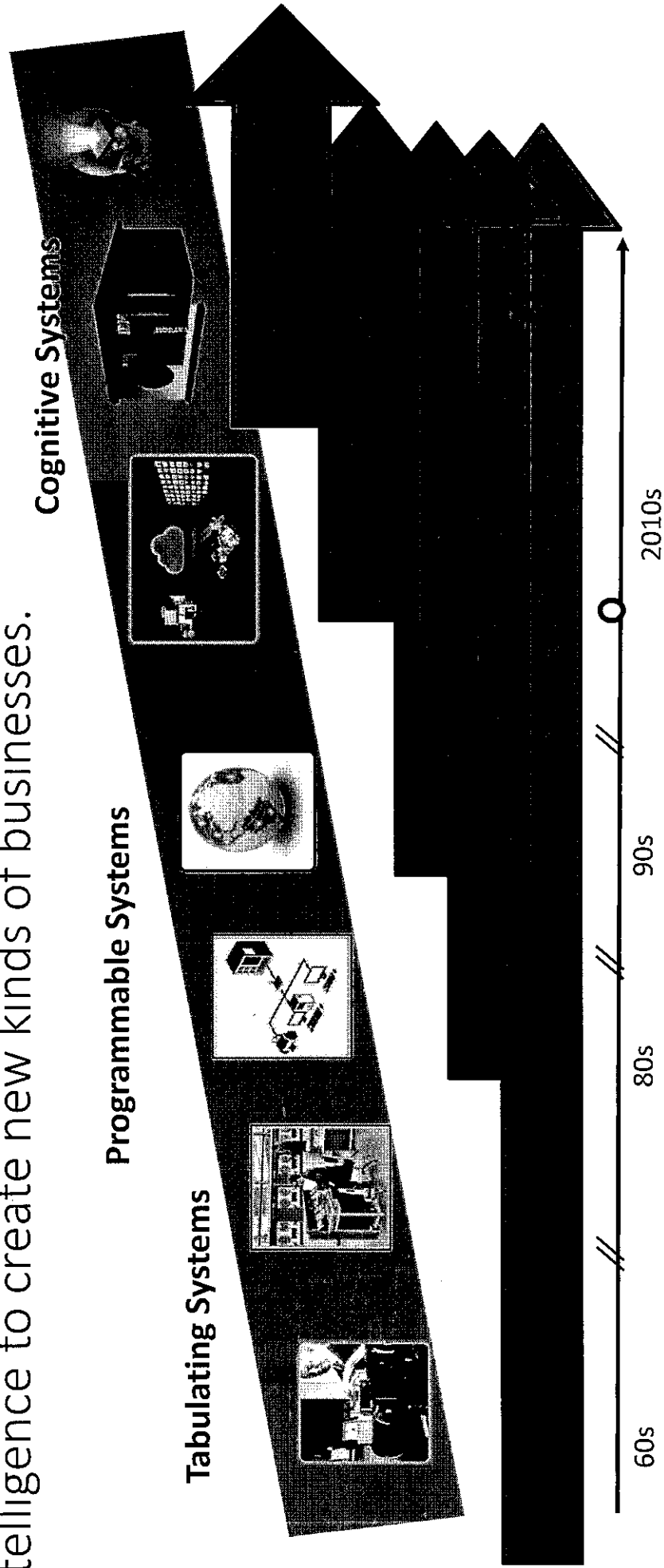
ICBM

AGA

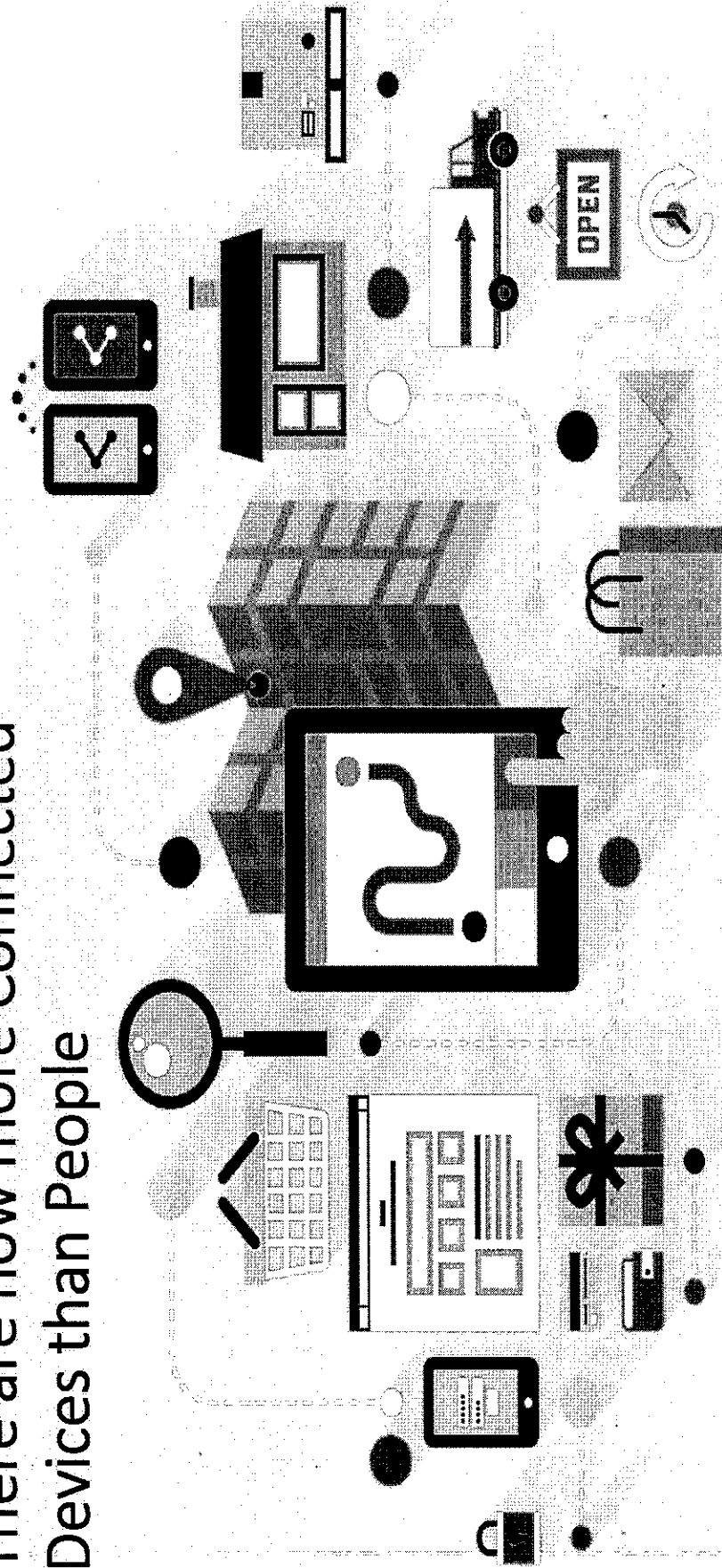
BAT

FAANG

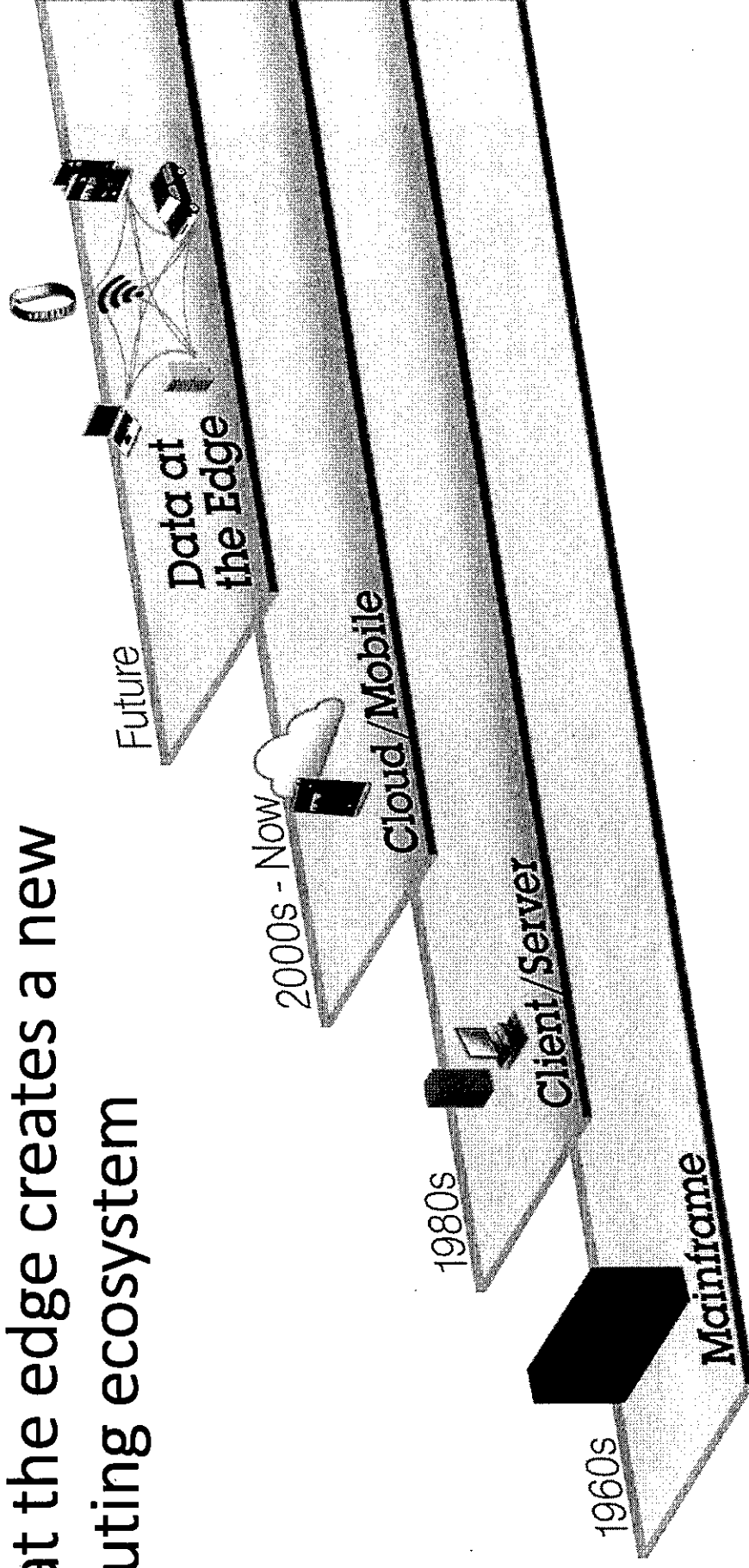
Startups use advances in technology and computing intelligence to create new kinds of businesses.



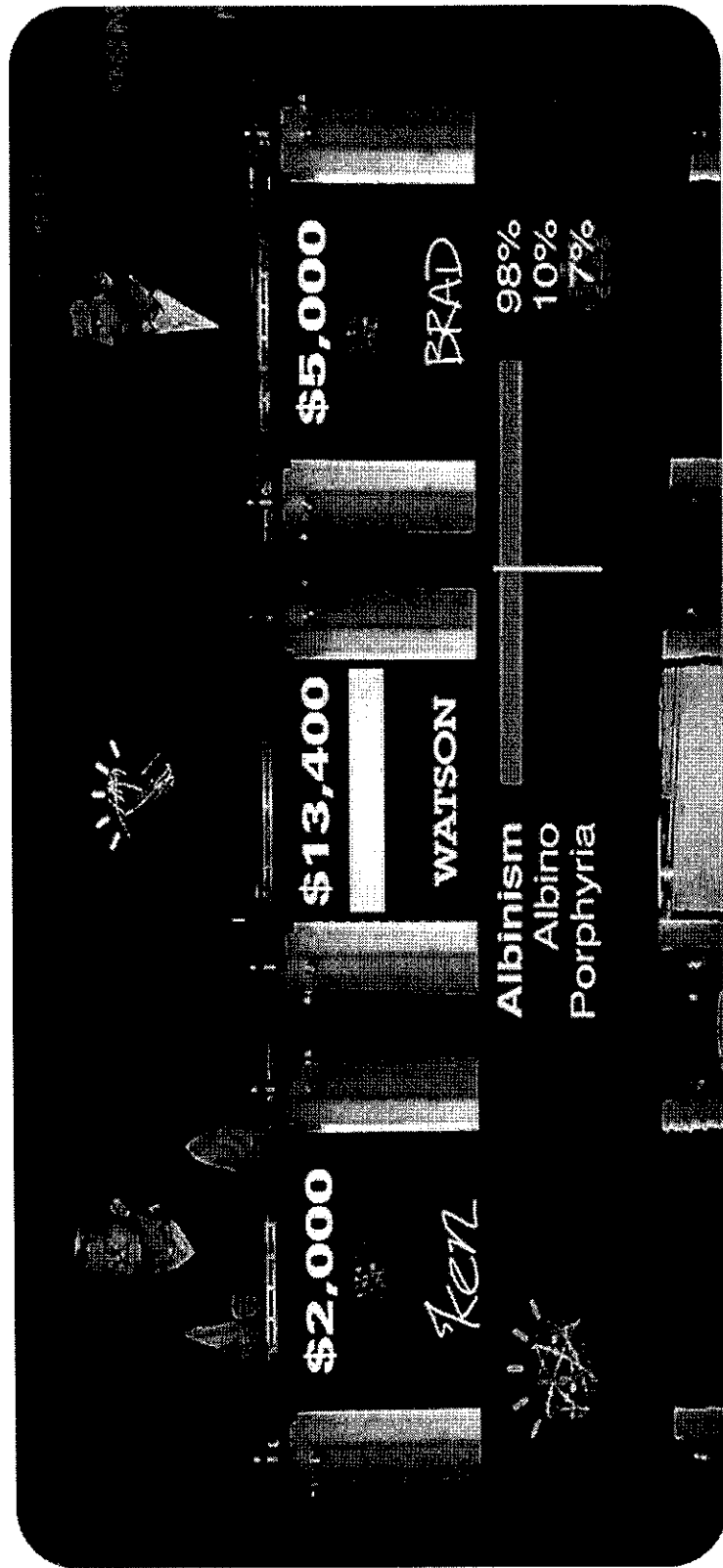
There are now more Connected
Devices than People



Data at the edge creates a new computing ecosystem



The era of relative equality 1492-2011, IBM Watson and the impact of businesses



Result of IBM Research "Grand Challenge"
On February 14, 2011, IBM Watson made history

Opportunity: Most data collected from devices is never turned into insights.

90%

Volume of data created at the edge of IoT that is never captured, analyzed or acted upon.

60%

Amount of that data that loses its value within milliseconds of being generated.

2X

Rate of data creation compared to the expansion of bandwidth over the past decade.

By 2017

The collective computing and storage capacity of smartphones will surpass all worldwide servers.

**Information is being captured from everywhere.
But, turning information into insight is the key.**

30 billion

RFID tags embedded
into our world and
across entire
ecosystems

1 billion

Camera phones in
existence able to
document accidents,
damage, and crimes

85%

Of new automobiles will
contain event data
recorders collecting
travel information

15 petabytes

Of new information is
generated every day and
can now be managed

1 petaflop

Or one quadrillion
operations per second
can be calculated

1 square kilometer

Of granularity for weather
prediction can be modeled
and measured



The need for smart technology is everywhere

\$48 billion

worth of food was
thrown out last year



70 %

of the world's population
will live in cities by 2050



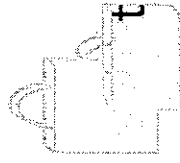
90 %

of the data in the world
today has been created in
the last two years



\$93 billion

lost by retailers because
the right products weren't
in stock



1.5 million

people in the U.S. are
harmed every year due to
medical prescription errors



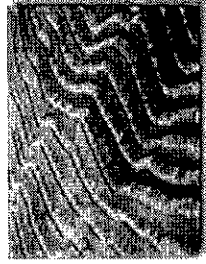
IoT offers a transformative business opportunity -- driving innovation and stimulating economic growth.



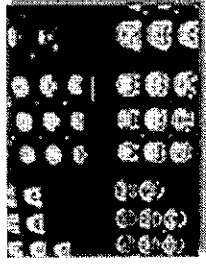
Smarter Roads



Smarter Oil
& Gas



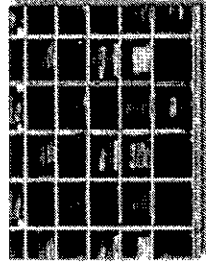
Smarter Food



Smarter
Healthcare



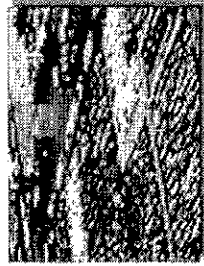
Smarter
Utilities



Smarter
Retail



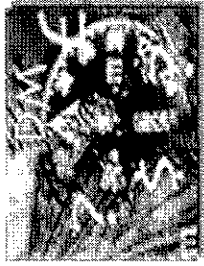
Smarter Telco



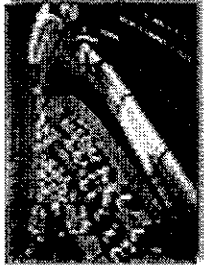
Smarter
Supply
Chains



Smarter
Public
Safety



Smarter
Money



Smarter
Transportation



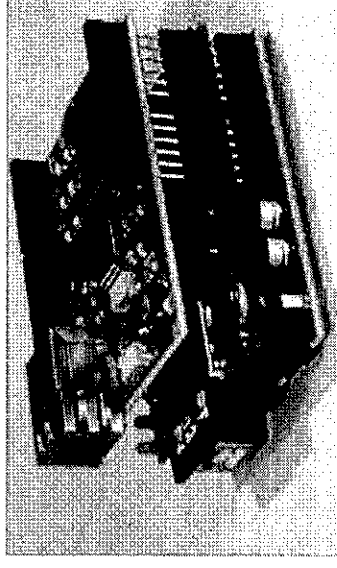
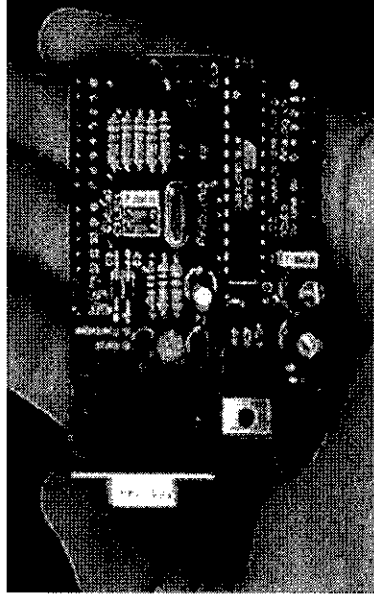
Smarter Cities



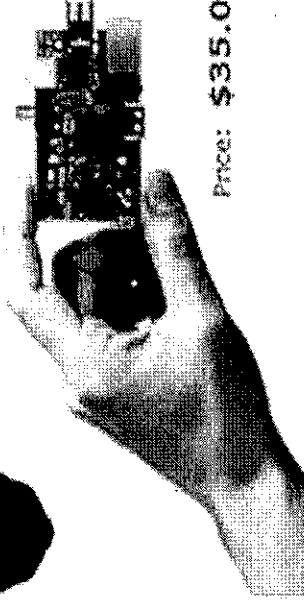
Smarter
Products

Inexpensive Open Hardware Platforms are Driving Innovation

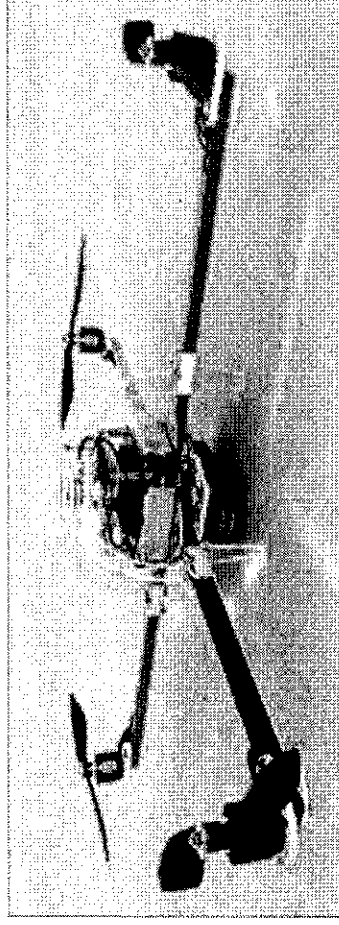
An ARM-based computer running GNU/Linux is as little as \$25. RasPod turns your Raspberry Pi into a music server. CHIP is \$9.



Raspberry Pi™



Price: \$35.00



Frontier Tech: Cyber-Physical Systems are the Fourth Industrial Revolution.

Artificial Intelligence

Autonomous vehicles

Genomics and Neuroscience

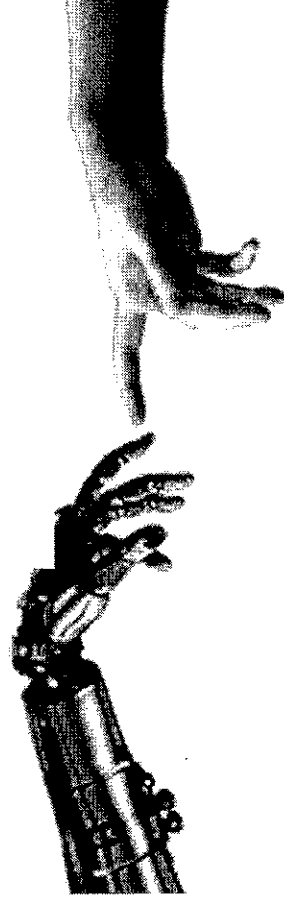
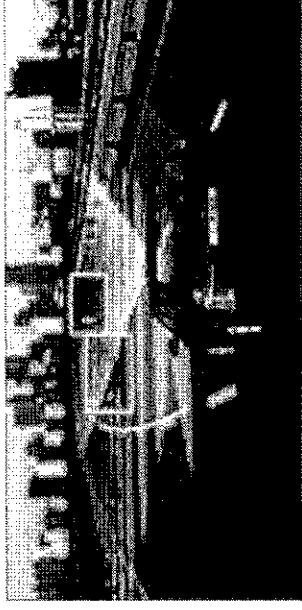
3D Printing or Additive Manufacturing

Virtual and Augmented Reality

Internet of Things

Robotics and Drones

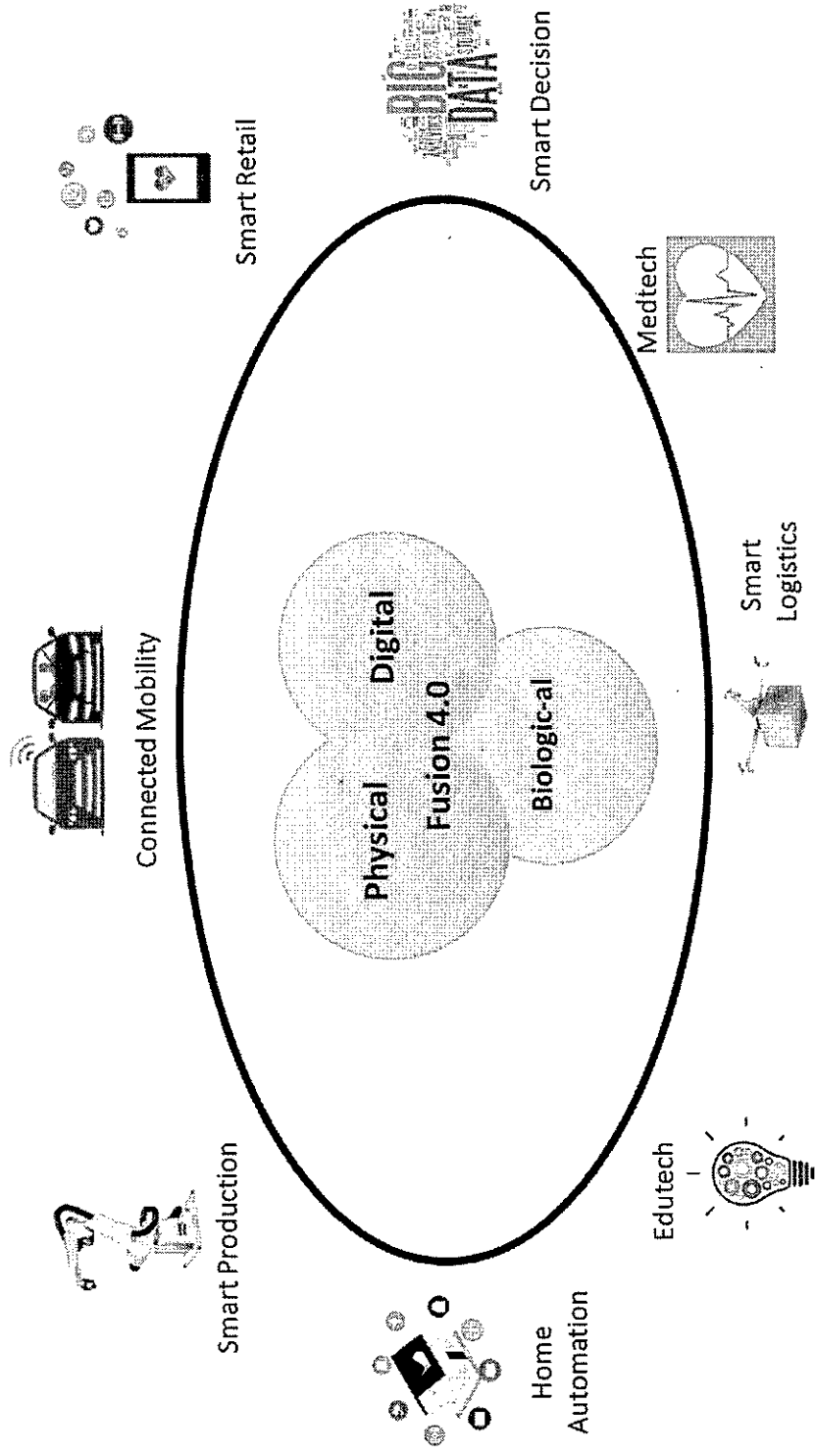
Space



IoT solutions incorporate big data, analytics, machine learning, AI.



Global transformation on Industrial Revolution 4.0



Courtesy: www.weforum.org 2016 - the fourth industrial revolution: what it means and how to respond

Data is the Next Oil

Mukesh Ambani, 2017



Oil Wells



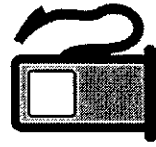
Oil Production



Refinery



Transportation



Pump



Data Sensing
and generation



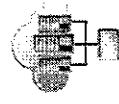
Data collection



Data Analytics



IoT
Intelligence of
Things



Data Centre
& Storage

Transformation to 4.0

Don't innovate to stay competitive;
Innovate to change the rules of the game

Disruptive
Technologies

Make electronics for
Non-Electronics

Creating Intelligent Products

Design led mfg.

25% of tech workforce will be contingent

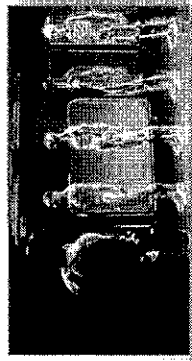
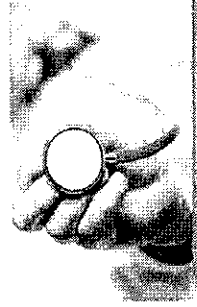
50% of business app will be in cloud

80% of all process will be eliminated

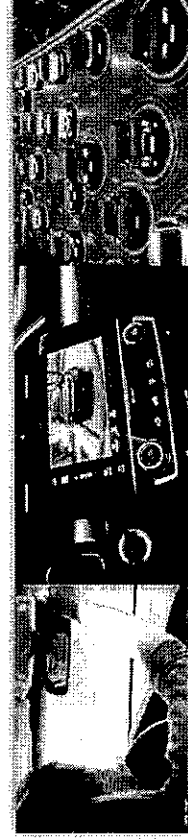
Factory Mgmt. & Operations

Technology Continues to Evolve...

Courtesy: Re-imagining Manufacturing, CII, Santhanam MD Saint Gobain India



**Intensive Manual labour to Robots and
Cobots...**

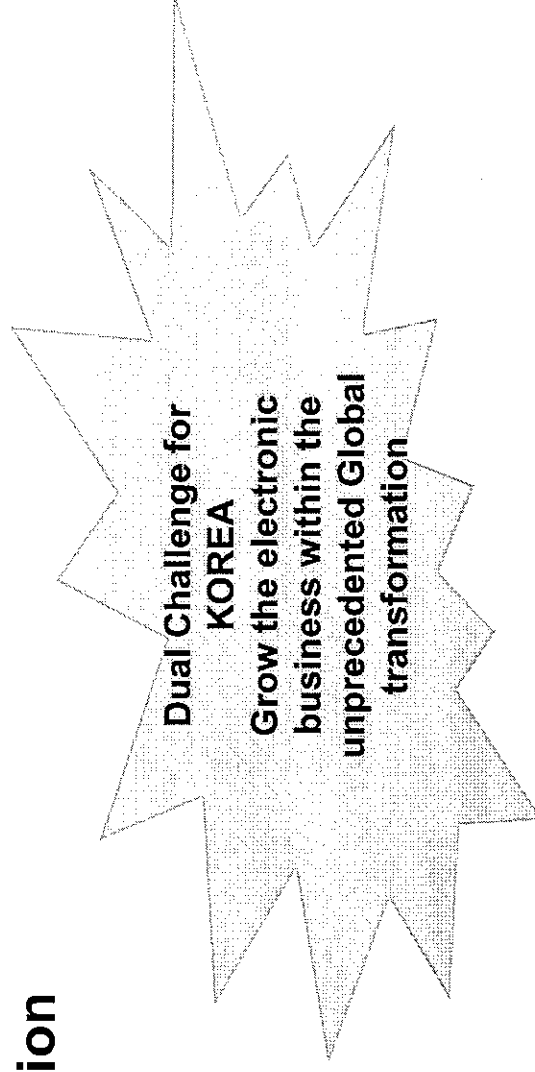


**Manual to Smart
Automation...**

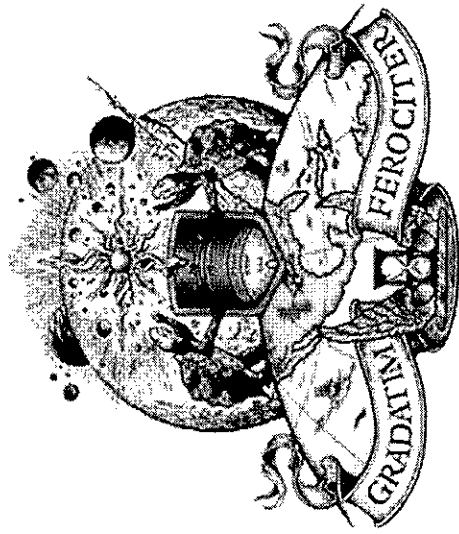
**... from Stethoscope to Augmented
Reality**

Road Map for Enhancing Value Addition

- ✓ Think Big, Think Scale
- ✓ Connecting to global Ecosystem
 - Supply Chain
 - Technology
 - Mega trends
- ✓ Understand global transformation
 - Focus on Smart products



Emerging scenario plays
into Korea's strength



Blue Origin

Step by Step Ferociously

Merry Christmas
and
Happy New Year

SMA 2017 International Conference